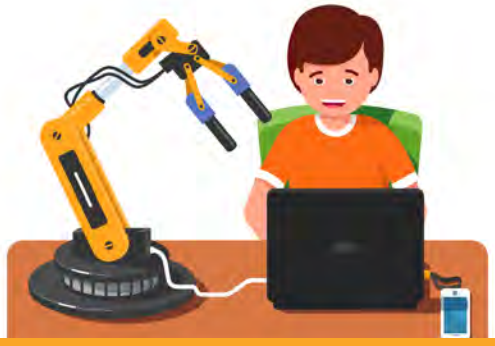
September 2021 *Monthly Newsletter* Vol 3 Issue 3

COMPUTER SCIENCE in ARKANSAS



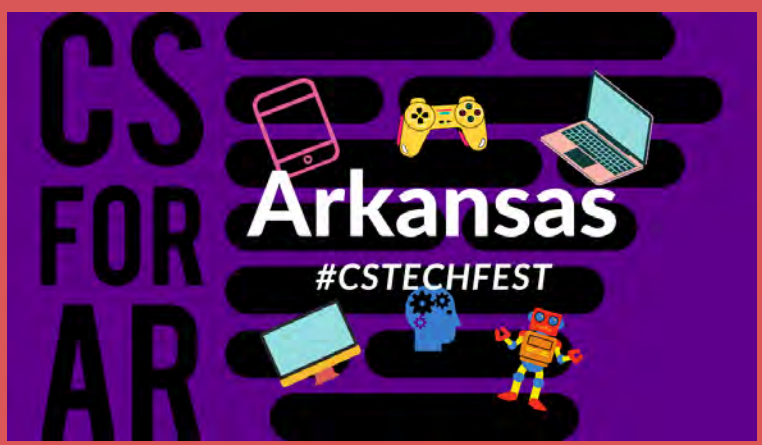
ARKANSAS #CSTECHFEST - FREE TECHNOLOGY EVENT

The Arkansas Department of Education (ADE) Office of Computer Science has announced the 2021 Arkansas #CSTechFest. This free event, designed for students grades 6 - 12, will be held October 16, 2021, in the Engineering and Information Technology building at the University of Arkansas of Little Rock. Join us for a fun-filled day exploring various topics in Computer Science and STEM such as game development, cybersecurity, and more. There is truly something for everyone!

This event is open to any and all participants from grades 6-12 and accompanying adults; however, the #CSforAR team will be providing participants that are members of Boy Scouts of America, Girl Scouts of the USA, and 4-H with information on how the sessions align, when applicable, with the award/badge requirements within those programs. Registered participants that attend will receive an Arkansas #CSTechFest patch/badge the day of the event.

Check in will begin at 7:30 a.m. for morning sessions, which begin at 8:30 a.m. and end at 11:30 a.m. Afternoon sessions start at 12:30 p.m. and end at 3:30 p.m. If you want to come in the afternoon or morning only, please indicate that on your registration form.

Registration is limited to 200 participants and is required for admittance (no walk-ins). Registration is open until noon on Wednesday, October 13, 2021. Arkansas Department of Health / UALR COVID-19 protocols will be followed. The registration form is found at: https://csforar.info/CSforARTechFest21



The following 3-hour sessions will be provided in the morning and again in the afternoon.

ARKANSAS #CSTECHFEST CONTINUED

Snoof Coding - Each participant will design and build a Snoof puppet using provided materials. Once you have designed your new friend, we will use the coding platform MakeCode and the physical computing device Circuit Playgrounds to make them come to life with sounds, actions, and lights. This session will be led by CS Specialists Tammy Glass and Leslie Savell. No previous experience is required.

Introduction to the Arcade: Chromebook-friendly Game Development - Join us for a session where we talk about the basic concepts of game development, twist some old card games, and code our first game in Python on MakeCode Arcade. Participants are encouraged to bring a laptop or Chromebook! This session will be led by CS Specialists John Hart and Mark Barnes. No previous coding is required. Suitable for 6-8th grades.

CSforAR Cybersecurity - In this session, participants will learn about cybersecurity and various aspects of hacking. Topics covered will be related to digital presence, safe technology use, and ethical hacking. Participants are encouraged to bring a laptop/Chromebook. This session will be led by CS Specialists Eli McRae and Alex Moeller.

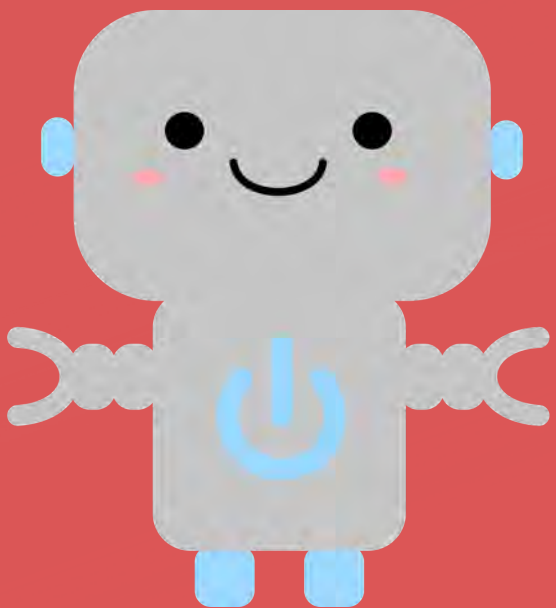
Would you like some Pi with that? - An introduction to physical computing with the Raspberry Pi. This training will leverage the power of computer programming and Raspberry Pi computers. It will explore some programming language syntax and physical computing. This session will be led by CS Specialists Jim Furniss and Zack Spink. Come join us in making our programs come to life using LEDs, resistors, buttons, and wires!

Drawing with Java - We will work through some cool and fun activities using the Java programming language. Leveraging an online IDE called Replit, we will create graphics using conditionals, loops, and methods. Participants are encouraged to bring a laptop or Chromebook. No previous coding experience is needed; everyone is welcome! This session will be led by CS Specialist Lori Kagebein.

Introduction to Electronics and Breadboarding W/Arduino - Participants will explore various electronic concepts and components through virtualization and physical resources. Participants will build and program circuits that accomplish a variety of tasks while covering the components and concepts that make the circuits work. Participants will model a functional working circuit virtually and then build their project using physical components. No experience is necessary for this session, only a willingness to learn and have fun. Participants are encouraged to bring a laptop or Chromebook. This session will be led by Kelly Griffin, Lead Statewide Computer Science Specialist.

IoT Workout - Self-Driving Car - The Industrial IoT workout familiarizes students with the operation of devices over the Internet. Students experience IoT by watching it operate from a cloud application they control to a device in front of them. Then, students learn the effects of attacks on IoT devices by modifying the data going between the cloud and the device. This session will be led by Sandra Leiterman of UALR.

VEX Robotics - Participants will learn to program a VEX robot that is capable of maneuvering around the competition arena to complete fun challenges. Participants will utilize the engineering design process to problem solve, document, and suggest improvements to the robot and program. This session will be led by Sarah Burnett of Arkansas Tech University.



ARKANSAS #CSTECHFEST CONTINUED

"Hamming" up Computer Science - What does amateur radio (ham radio) have to do with computer science and computing? Many of the engineering concepts within computer science can trace its roots back to the development of sending and receiving radio transmissions; after all, Wi-Fi is the transmission of data over radio-wave frequencies. Knowledge of amateur radio concepts will assist all individuals in better understanding how so many of the items we use daily operate, but it is especially useful to individuals interested in computer science, networking, and computer engineering. This session is NOT designed to prepare a participant for an amateur radio license test (there is just not enough time), but it will provide the participant with a broad overview of amateur and broadcast radios and the technology behind their use. This session will be provided by Anthony Owen, the State Director of Computer Science, who is also an amateur radio operator with the call sign KD5NMZ. Members of the Central Arkansas Radio Emergency Net (www.carenclub.com) will be present to answer questions and demonstrate the technology.

Amateur Radio License Testing - Volunteer Examiners from the Central Arkansas Radio Emergency Net (www.carenclub.com) will be present to administer the test for Technician Level Amateur Radio Licenses for participants who are prepared. Please note, they will only be providing the testing opportunity; this is not a session to prepare individuals for the test, and participants interested in sitting for this test on this day must follow the directions found at https://csforar.info/ARLInstructions by October 13th. There is a $15.00 fee due the day of the exam required by the FCC to sit for this test.

Session options may change based on registration numbers.

If you have questions or would like to volunteer to assist at #CSTechFest, please contact CSforAR@ade.arkansas.gov. You can view the commissioner's memo here: https://adecm.ade.arkansas.gov/ViewApprovedMemo.aspx?Id=4899

2021 APP IN A DAY VIRTUAL STUDENT EVENT

Are you looking for a way to get your students involved in the 2021 Congressional App Challenge (CAC)? The 2021 App in a Day Virtual Student event is an opportunity to help your 7-12 grade students kick start their App development for the CAC.

In previous years, this event was completed in a single day, but due to Covid-19 restrictions, it will be offered virtually. The virtual event will consist of pre-work that will take approximately one class period. You will want to complete this with your students prior to the scheduled App in a Day. Completing the entire App in a Day in your own classroom will depend on how often you schedule to meet with your class, but teachers should expect to plan for approximately 5+ hours in total. Once again, how you schedule this and in what time blocks is totally up to you, but be aware that the CAC deadline is **November 1, 2021**. Note: you are not required to submit your app for the CAC, but we highly encourage you to do so.

To get started, complete the 2021 App in a Day Digital Package Request at https://bit.ly/2021APPINADAY. After receipt of the form, information will be sent out to the email provided. You will also receive presentations, worksheets, and resources to complete App in a Day. On September 29th, the CS Specialists will be in the CS Coffee Cafe at http://bit.ly/ARCSCoffee to assist you and your students throughout the day.

For more information about App in a Day contact Tammy Glass at tammy.glass@ade.arkansas.gov.

For more information about the Congressional App Challenge visit https://www.congressionalappchallenge.us/

Complete Rules for CAC are found at: https://www.congressionalappchallenge.us/students/rules/

HIGH SCHOOL COMPUTER SCIENCE CERTIFICATION TRAINING

The Arkansas Department of Education (ADE) Office of Computer Science has announced that the Arkansas Statewide Computer Science Specialists will be providing the High School Computer Science Certification and Preparation training over four Saturdays this fall. This 30-hour training will take place from 8 a.m. - 4 p.m. on September 11, 18, 25, and October 2, 2021.

The purpose of this training is to prepare Arkansas educators planning to teach high school computer science, and are needing assistance passing the Computer Science (CS) Praxis Exam 5652. Participants will review Arkansas 9-12 Computer Science course codes, CS Standards, CS Fact Sheet, Curriculum Resources, and Prep Material to be used for passing the Computer Science Praxis. Participants may need to spend additional time outside of the training prior to taking the Praxis Exam.

This training will be completely online using the Zoom platform. Participants will be encouraged, but not required, to keep their cameras on during the entire training. Zoom logs, along with periodic attendance checks, will be used to verify attendance. Participant interaction is expected and an integral part of the training. Participants need to be engaged during the full 30-hour training to be issued a professional development certificate or be eligible for a 5016 Computer Science approval code (or 5013/5014 technical permit).

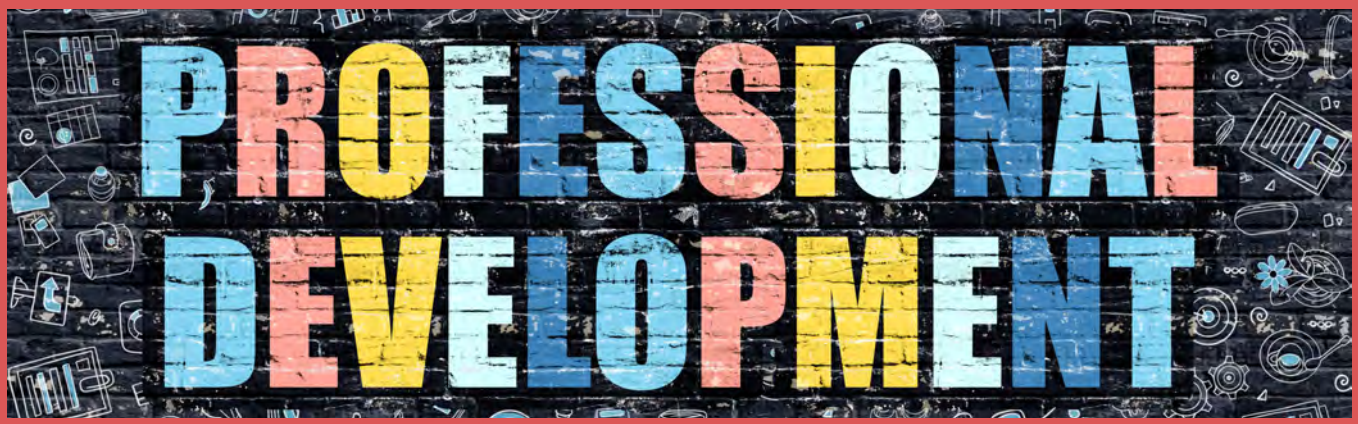
Participants who fully complete this training, along with all other requirements for each, will be eligible to apply for a 5013 Classified Staff Computer Science Technical Permit, a 5014 Computer Science Technical Permit, or a 5016 Computer Science Approval Code.

Information on these three computer science licensure codes can be found at:

- 5013 - https://bit.ly/CSforARTechPermit5013
- 5014 - https://bit.ly/CSforARTechPermit
- 5016 - http://bit.ly/CSforARApprovalCode

To sign up for this training, please visit https://csforar.info/PD and look for a session link under the *(Online) High School Computer Science Certification and Preparation (30 hours)* heading. If your school is not part of an educational service cooperative, please sign up using the link for "*Arch Ford ESC Area Educators.*"

Please contact CSforAR@ade.arkansas.gov if you have questions or need assistance.



DIGITAL DESIGN: INNOVATIVE CODING THROUGH EMBROIDERY

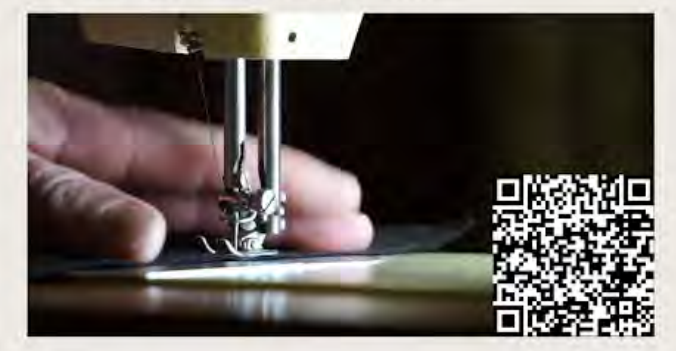
Are you looking for an innovative way to reach students in computer science? Then join us on September 30, 2021 at the Southwest Arkansas Education Cooperative for this wonderful professional development opportunity!

During this session, participants will have the opportunity to explore a tool that can be used to reinvigorate students. Students will be able to write a program that will generate a physical computational artifact. Through a unique and innovative experience using a free online graphical coding environment (Turtlestitch), you can learn innovative coding through embroidery.

Turtlestitch is a block-based programming language based on Snap! that allows you to program a path much like a 3D printer but in 2D. Coding and Embroidery will allow educators to reach a larger audience by drawing on the very artistic and creative approach to coding.

*THIS PD REQUIRES AN EMBROIDERY MACHINE. You may bring or purchase one, but please email tammy.glass@ade.arkansas.gov or leslie.savell@ade.arkansas.gov for machine specs. Some machines will not work.

Register today at: bit.ly/CSforARPD or scan the QR code to the right.



LearningBlade® CORNER

Learning Blade Corner - a monthly snapshot of happenings with Learning Blade in AR

Come and explore robotics with Learning Blade:

Learning Blade offers your students a chance to explore careers in the Computer Science field through robotics.

With activities like:

- Computer Programmer:
  - Bits and Bytes-Understanding how a computer works, CPU, types of memory, and computer languages.
- Computers:
  - A supercomputer in your pocket-Learn about the importance of scientific notation and its significance in computers.
- Electrician Technician:
  - Electrician Circuits-Explore how electrical circuits are formed and how they are powered.
- Sensors and Logic:
  - Seeing with Sound-Sonar-Learn how sensors are used to “see” when sight is impossible.

Learning Blade can bring a real-world perspective of high-demand computer science careers.

Learning Blade® is a system of interactive online lessons, teacher lesson plans, and printable at-home activities for 5th to 9th graders, where students learn about high-demand STEM, CTE and Computer Science careers while reviewing academics. Students can use over 400 online lessons in human-centered "Missions" or stories to explore exciting careers aligned to state standards. Teachers also have access to dozens of lesson plans that support innovative project-based learning and classroom activities using common materials.

ARKANSAS ADVANCED PLACEMENT COMPUTER SCIENCE A INCENTIVE PROGRAM FOR SCHOOL YEAR 2021-2022

The Arkansas Department of Education (ADE) has announced the continuation of the Arkansas Advanced Placement Computer Science A Incentive Program. The purpose of this program is to increase the number of qualifying scores (3, 4, or 5) on the College Board Advanced Placement (AP) Computer Science (CS) A exam. This program will not apply to the College Board AP CS Principles exam or any other exam.

Under this program, Arkansas students and schools may be eligible to receive a tiered monetary incentive/reward when the student receives one computer science flex credit for successfully completing an AP CS A course in an Arkansas public school and makes a qualifying score on the AP CS A exam taken between July 1, 2021, and June 30, 2022.

The tiered rewards are as follows:

- For a qualifying score of 5 on the AP CS A exam, an Arkansas public school student can receive up to $1000, with the school receiving up to $250
- For a qualifying score of 4 on the AP CS A exam, an Arkansas public school student can receive up to $750, with the school receiving up to $150
- For a qualifying score of 3 on the AP CS A exam, an Arkansas public school student can receive up to $250, with the school receiving up to $50

Student scores will be verified by official College Board data shared with ADE during the fall of 2022. Payments to schools/students will be processed by November 30, 2022. Student award payments will be sent to the school district for distribution.

Each student may only receive any of the above awards once, and teachers may not receive multiple awards for the same student.

ADE is anticipating an allocation of up to $175,000 for this fifth year of the incentive program. This incentive program may be canceled and/or incentive amounts, including individual award amounts, are subject to change at the discretion of ADE, with or without advanced notice, and is subject to available funding and allowable appropriation of funds.

Because of testing delays due to the COVID-19 pandemic, awards for the Arkansas Advanced Placement Computer Science A Incentive Program for School Year 2020-2021, last school year's program, will not be distributed until November 2021.

For more information visit: https://adecm.ade.arkansas.gov/ViewApprovedMemo.aspx?Id=4890

CS BONUS APPLICATION DEADLINE

Beginning in fiscal year 2022 (FY22), which began July 1, 2021, the ADE Office of Computer Science is adjusting the application and funding distribution windows to align more appropriately with the school year.

Applications for the fall will be accepted August 15 - September 30, 2021 and disbursements will be made to districts by November 15, 2021. All bonuses should be paid to appropriate educators by December 31, 2021.

Note that the application windows will **only** be open August 15 through September 30 and February 1 through March 15 of each school year.

CREATIVE THINKING THROUGH COMPUTER SCIENCE

This article was written by CS Specialist Tammy Glass.

When you think of the word “creative,” what comes to mind? Someone sitting outside painting a beautiful landscape portrait? How about an amazing composer like Mozart? Or maybe even a fashion designer? Although many times our minds associate creativity with art, we don’t have to be an artist to be creative.

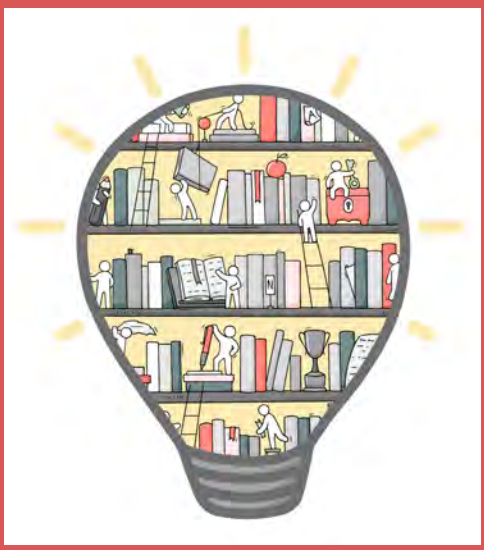
Each one of us contains some level of creativity. I bet you are saying “Oh, not me, I don’t have a creative bone in my body!” Oh, yes you do! To find your creativity let’s start by looking at what creativity is. Some people refer to creativity as “thinking out the box”. A simple Google search returns a definition of creativity as “relating to or involving the imagination or original ideas.”

Creativity has power! The power to solve problems! It encourages us to be risk takers. From personal experience I know that allowing myself time to be creative has many benefits: it is a stress relief, boosting my mental health; it helps me think through and solve problems; and it provides an avenue for expression and exploration of things I am interested in, even if they are outside of my comfort zone. Did you know that only one in four people believe that they are living up to their creative potential, and only 52% of Americans describe themselves as creative?

In our Computer Science Practices, we define students’ Problem Solving as exhibiting proficiency through the process of identifying and systematically solving problems. Another practice: Understanding is defined as the student's ability to recognize patterns, utilize tools, and apply problem-solving strategies to build understanding, find solutions, and successfully deliver high-quality work. Let’s remember a few words from each: "solving problems" and "find solutions!"

Let’s go back to our definition of creativity: “relating to or involving the imagination of original ideas.” Two important words to notice are "**original ideas**". Now let’s look at two of the words I mentioned from the practices, "**find solutions.**" So when we are in our computer science classrooms, are we teaching only the concepts, or are we encouraging our students to develop original ideas that find solutions for problems that are surrounding them?

I often ask myself "What can I have students create that will provide them with an opportunity to express their interests while still showing me they understand and can apply the concepts of computer science?"



My latest “creative” idea has been to incorporate computer science and puppetry. At the beginning of summer, we were asked to make computer science videos for elementary students, and I came up with this crazy idea that puppets would be a fun way to teach kids about CS. I ordered a few puppets and convinced another specialist into helping with this project, and off we went to writing, filming, editing and puppeteering.

This task sparked interest and created a problem I needed to solve. After our puppet shows were finished, I decided I needed more! More puppets! More interactivity! And, so I started to research. Eventually, I taught myself how to make a puppet. As I was using my creativity to build these puppets, I wondered how I could use these newfound skills and passion to make my puppets even cooler. Out of that one initial challenge, many new creative ideas and solutions sprung into existence.

For some, creativity comes easy, and for others, it may take a little more looking, but creativity is something we all can strive for, leverage and bring to the table. All of our students can be creative if given the right opportunity. So, what all are you doing to build a creative culture in your computer science classroom?

HACK ACROSS ARKANSAS 0X0X - SUMMER 2021 CYBERSECURITY PD

This article was written by CS Specialist Eli McRae.

You may not be aware of this, but Arkansas has computer science standards specific to cybersecurity. In fact, there are elements of cybersecurity embedded in ALL of the computer science pathways and the embedded K-8 standards. What's really cool about that is there are real conversations being had in almost every high school around the state regarding what it means to be a hacker. They are discussing concepts like what it means to "hack" into something as well as other aspects of the hacker community as a whole.

This summer I was able to provide professional development to more than 30 teachers who signed up for the Advanced Cybersecurity session held on July 12, 2021. This was a 30-hour training that not only covered core InfoSec talking points, but really practical and hands-on activities to take back to the classroom and industry. The teachers themselves gained several tangible and marketable skills such as mapping a network, identifying and exploiting vulnerabilities in websites, and even writing and deploying their own malware (for educational purposes only, of course).

There were many great discussions regarding ethics and the notion of informed consent. In some instances, we should guide the conversation away from fear-mongering and reframe the narrative in a more positive and engaging way to help get the administration on board. These conversations will pay dividends when presented to the students.

Context matters, and we provided a lot of it. One of the most valuable takeaways from this PD was a document that maps every CS Cybersecurity standard for years one, two, and three to at least one teaching resource.

If you are interested in the document, other presentation materials, or want to ask any questions, please reach out to Eli McRae at eli.mcrae@ade.arkansas.gov.

Further Reading

- https://cyber.arcs.rocks/standards

UPCOMING TRAINING

bit.ly/CSforARPD

#CSFORAR COFFEE CAFE

bit.ly/ARCSCoffee

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